On the Role and Design of Dispute Settlement Procedures in International Trade Agreements

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Introduction

The existing models of trade agreements treat disputes as synonymous with enforcement.

But in a typical WTO case, issue in dispute is rarely the straightforward enforcement of an unambiguous obligation under the agreement.

1. Disagreements over what was signed on to: Interpretation;
2. Instances where legal text of the agreement is silent: Gap-filling;
3. Some say DSB should grant exceptions to rigid obligations: Modification.

In (1)-(3), the role played by the DSB amounts to “completing” various dimensions of an incomplete contract.
We evaluate the role that DSB might play in completing an incomplete contract.

We highlight the interaction between design of contract and design of DSB. We treat the two as components of an over-arching institutional design problem.

Build on Battigalli and Maggi (2002). Two forms of contractual incompleteness:

- *rigidity*; and
- *discretion*.

Use fuzzy logic to introduce a contracting language which is vague in nature:

- Gives rise to a third form of contractual incompleteness: *vagueness*. 

*rigidity*; and 
*discretion*.
The three possible (non-enforcement) roles of the DSB are then naturally paired with our three forms of contract incompleteness:

1. The DSB can *interpret* aspects of the contract that are left *vague*;
2. The DSB can *fill gaps* where the contract is silent and therefore leaves governments with *discretion*;
3. And the DSB can grant exceptions and thereby *modify* aspects of the contract that are *rigid*.

Or, the DSB can serve none of these functions and simply enforce contractual obligations that are unambiguous.

What is the combination of contract form and DSB role that maximizes the ex-ante joint payoff of the governments, i.e., the optimal *institution*?
Findings

- A contract that has gaps or is vague, and a DSB that plays an activist gap-filling/interpretive role, is optimal if quality of DSB information concerning government objectives sufficiently high.
  - If DSB information sufficiently good (though not perfect), the optimal institution achieves first-best, even though: contract is highly incomplete; use of the DSB is costly; and DSB rulings are imperfect. In this case, DSB role entirely off-equilibrium.
- A contract that is vague or rigid, and a DSB that is passive and simply enforces contractual obligations that are unambiguous, is optimal if quality of DSB information concerning government objectives sufficiently low.
  - Modification role of DSB is never optimal.
- A non-monotonic relationship between observed frequency of DSB disputes and performance of optimal institution.
Selection effects can explain the observed “pro-trade bias” in WTO DSB rulings if dispute costs are high for complainant relative to defendant.

But same conditions imply an “anti-trade bias” in policy outcomes.

Giving the DSB precedent-setting authority is sub-optimal unless:

- the DSB is sufficiently poorly informed about government objectives; or
- governments care sufficiently little about the future.
Plan of the Talk

1. Sketch of the Basic Model
2. The Optimal Institution
3. A pro-trade bias in the DSB?
4. Precedent Setting
5. Extensions
6. Conclusion
Sketch of the Basic Model

Economic structure

- A single industry; importing government chooses $T \in \{FT, P\}$ to maximize $\omega(T; s)$, where $s \equiv (s_1, s_2, ..., s_N)$ is a state vector.
- The exporting government is passive in this industry; its payoff is $\omega^*(T; s)$.
- Each state variable represents a binary event, such as “there is/is not an import surge” or “the domestic industry does/does not shut down.”
- Importing government’s gain from protection: $\gamma(s) \equiv \omega(P; s) - \omega(FT; s) > 0$ for all $s$.
- Exporting government’s loss from protection: $\gamma^*(s) \equiv \omega^*(P; s) - \omega^*(FT; s) < 0$ for all $s$.
- Joint (positive or negative) gain from protection: $\Gamma(s) \equiv \gamma(s) + \gamma^*(s)$; $\Gamma(s) < 0$ for $s \in \sigma^{FT}$ and $\Gamma(s) > 0$ for $s \in \sigma^P$. 
State variables $s_i$ are verifiable, but costly to describe in a contract. As a first step, assume that the cost of describing state variables is high, so that it is suboptimal to include them in the contract. Consider the following possible contracts:

- **Rigid (R)** contract: $T = FT$ for all $s$.
- **Discretionary (D)** contract: $P$ allowed for all $s$. (Same as no contract.)
Vague ($V$) contract: $P$ is allowed if $F$ (where $F$ is a vague sentence such as “there is substantial injury to the domestic industry”).

The truth function of $F$ is the following:

Sentence $F$ is \[
\begin{align*}
\text{True} & \quad \text{if } s_1 = \ldots = s_N = 1 \\
\text{False} & \quad \text{if } s_1 = \ldots = s_N = 0 \\
\text{Undefined} & \quad \text{otherwise}
\end{align*}
\]

Let $s^1 \equiv (1, \ldots, 1) \in \sigma^P$; let $s^0 \equiv (0, \ldots, 0) \in \sigma^{FT}$. 
In case of a DSB dispute, the exporter (complainant) incurs cost $c^*$ and the importer (defendant) incurs cost $c$.

If invoked, DSB observes $s$ and a noisy (unbiased) signal of $\Gamma(s)$, and it issues a ruling, $T^{DSB}$, that maximizes the expected joint payoff given the signal.

DSB recommends the wrong policy with probability $q$. 
### Candidate Institutions

<table>
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<th>Contract DSB Role</th>
<th>Discretion</th>
<th>Rigidity</th>
<th>Vagueness</th>
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<td>Non-activist DSB</td>
<td>$D_n$</td>
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<td>Activist DSB</td>
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stage 0. The institution is created.

stage 1. The state of the world \((s_1, s_2, \ldots, s_N)\) is realized.

stage 2. The importer government chooses policy \(T \in \{FT, P\}\).

stage 3. The exporter government decides whether to file with the DSB.

stage 4. If invoked, the DSB issues a ruling \(T^{DSB} \in \{FT, P\}\).

stage 5. If \(T \neq T^{DSB}\), the import policy is modified to comply with the DSB ruling.

stage 6. Trades occur and payoffs are realized.
Analysis

Disputes with an activist DSP

- Exporter government files a complaint iff $T = P$ and

$$Pr(\text{DSB ruling is } FT \mid s) \cdot |\gamma^*(s)| > c^*. \quad (F)$$

- Importer government chooses $T = P$ if either $(F)$ fails, or if $(F)$ holds but

$$Pr(\text{DSB ruling is } P \mid s) \cdot \gamma(s) > c. \quad (P)$$

- Focus on small filing costs:

$$\frac{1}{2} |\gamma^*(s)| > c^* \text{ and } \frac{1}{2} \gamma(s) > c \text{ for all } s.$$
Disputes with an activist DSP

- Consider the institution $D_g$.
  - In states $s \in \sigma^{FT}$: if $q_k(s) < \frac{c}{\gamma(s)}$ then $T = FT$ and the DSB is not invoked; if instead $q_k(s) > \frac{c}{\gamma(s)}$ then $T = P$ and the DSB is invoked.
  - In states $s \in \sigma^{P}$: if $q_k(s) < \frac{c^*}{|\gamma^*(s)|}$ then $T = P$ and the DSB is not invoked; if instead $q_k(s) > \frac{c^*}{|\gamma^*(s)|}$ then $T = P$ and the DSB is invoked.

- Notice: the equilibrium motives that trigger a DSB filing under the $D_g$ institution are inefficient from an ex-ante perspective, and it is the off-equilibrium impacts of the activist role of the DSB that are efficiency-enhancing.

- Notice: two kinds of disputes; either importer opportunistically exploits incompleteness of contract; or exporter opportunistically exploits incompleteness of contract.
Proposition 1  There exist critical levels $q_1$ and $q_2$ (with $0 < q_1 \leq q_2 \leq 1$) such that: for $q < q_1$ the optimal institution is $D_g$; for $q_1 < q < q_2$ the optimal institution is $V_i$; and for $q > q_2$ the optimal institution is either $V_n$ or $R_n$.

- Leave governments with greater discretion and provide DSB with mandate to reign in that discretion the better the quality of DSB information.
- If $q$ is sufficiently small, the first best outcome can be achieved even though: (i) the contract is highly incomplete; (ii) the use of DSB is costly; (iii) DSB rulings are imperfect. But DSB must be given activist mandate.
- No “modification” role for the DSB in the optimal institution; and non-monotonic relationship between frequency of equilibrium disputes and performance of optimal institution relative to first best.
Empirically, there is an apparent “pro-trade bias” in DSB rulings. Both under the GATT (82 per cent) and the WTO (88 per cent) complainants have mostly won their cases.

The model can be used to examine under what conditions DSB rulings exhibit a “pro-trade” or an “anti-trade” bias.

More specifically, we examine the direction of the selection bias in DSB rulings (by assuming away other sources of bias).

We show that, when $c^*$ is high relative to $c$, DSB rulings exhibit a “pro-trade bias” (i.e. the DSB ruling is $FT$ with prob > 1/2).

But we also find in this case that the equilibrium policies exhibit an “anti-trade bias” (i.e. the equilibrium policy is $P$ with prob > 1/2).

Figure 1.
Always dispute

No-Bias Locus

Figure 1

Typical dispute: Home trying to get away with Protection.

Typical dispute: Foreign trying to force Free Trade.
Should DSB rulings set legal precedent for future rulings?

Consider a two-period version of the static model developed above. Period 0: the institution is created; Period 1 and Period 2 then proceed as in the static model.

The state $s$ is iid across the two periods.

Discount factor: $\delta \geq 0$ (since the “future” is collapsed into Period 2, $\delta$ may be arbitrarily large).

If rulings set precedent, a Period-1 ruling for the realized state $s'$ will apply also in Period 2 if the realized state is again $s'$. 
Consider the institution $D_g$.

For $s \in \sigma^{FT}$: if $q_k(s) < \frac{c}{(1+\delta p(s))\gamma(s)}$ then $T_1 = FT$ and the DSB is not invoked in Period 1; if instead $q_k(s) > \frac{c}{(1+\delta p(s))\gamma(s)}$ then $T_1 = P$ and the DSB is invoked in Period 1.

For $s \in \sigma^P$: if $q_k(s) < \frac{c^*}{(1+\delta p(s))|\gamma^*(s)|}$ then $T_1 = P$ and the DSB is not invoked in Period 1; if instead $q_k(s) > \frac{c^*}{(1+\delta p(s))|\gamma^*(s)|}$ then $T_1 = P$ and the DSB is invoked in Period 1.

Trade-off: induces equilibrium filing in additional states (bad); saves on duplicative filing costs in states where filing would occur anyway (good).
Proposition 3: Conditional on the DSB playing an activist role (gap-filling or interpretation), it is optimal to give the DSB precedent-setting authority for $q$ sufficiently large, while it is preferable not to do so for $q$ sufficiently small.

- Intuition: when DSB sufficiently well-informed, little chance of equilibrium filing absent precedent, so little expected savings of duplicative filing costs.

Proposition 4: There exists an intermediate range of $q$ such that, conditional on the DSB playing an activist role (gap-filling or interpretation), it is optimal to give the DSB precedent-setting authority if $\delta$ is sufficiently low, while it is preferable not to do so if $\delta$ is sufficiently high.

- Intuition: high $\delta$ magnifies additional impetus to file that comes with precedent.
Extensions

Further institutional design possibilities

- Introduce DSB hearings.
  - DSB may be able to elicit some information from disputants, but not full revelation (Krishna and Morgan, 2001, Battaglini, 2002); $q$ reinterpreted as DSB’s residual uncertainty.

- Introduce bias into DSB rulings.
  - Optimal direction of bias not obvious; would require a great deal of information.
Multidimensional policies

- Introduce possibility that DSB completes policy dimension of incomplete contract (e.g. subsidies).
  - Home chooses a subsidy program \( t = (t_1, \ldots, t_M) \), with \( t_i \) representing a binary policy instrument.
  - If too costly to describe policy instruments in detail, then: leave subsidy program \( t \) to discretion; impose a rigid ban on subsidies (\( t_i = 0 \) for all \( i \)); or
  - Specify a vague rule on subsidies: “trade-distorting subsidy programs are prohibited.”
  - The sentence “the subsidy program is trade-distorting” is true for \( t = (1, \ldots, 1) \), false for \( t = (0, \ldots, 0) \), and otherwise undefined.

- Results should extend in a natural way.
  - But precedent may apply more broadly: therefore less desirable.
Early settlement

According to Busch and Reinhardt (2006), roughly 1/2 of WTO disputes resolved in consultation stage, 2/3 resolved before final DSB ruling.

How could our model account for this feature?

- Introduce enforcement; consultations put to rest suspicion that an unambiguous obligation has been violated.
- Even absent pure enforcement concerns, consultations may provide (low cost) information about the likely direction of DSB ruling.
- Sometimes consultation may allow means of compensation to be found.
- Introduce a constraint on governments’ ability to litigate policies.

According to Busch and Reinhardt, important determinant of early settlement is absence of 3rd-party involvement.

- Extend model to multi-country setting.
We have assumed an external enforcement mechanism. How would reputation mechanisms play out in the model?

- Conjecture: a non-trivial impact on the activist DSP roles that we highlight.

If enforcement relies entirely on reputation mechanisms, then an activist role for the DSB could arise, as a way to enlist third-party help in enforcing the agreement.

But this role would seem to require:

- more than 2 countries;
- governments that are not too patient; and
- payoffs that are unobservable to third parties.
Conclusion

- We model the design of contract and design of DSB as components of an over-arching institutional design problem.
- A contract that has gaps or is vague, and a DSB that plays an activist gap-filling/interpretive role, is optimal if quality of DSB information concerning government objectives sufficiently high.
  - If DSB information sufficiently good (though not perfect), the optimal institution achieves first-best; DSB role entirely off-equilibrium.
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